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ABSTRACT

This paper, which presents a comparison of informal and formal preschool programs, describes the arguments used by proponents of the formal, more structured, teacher-centered programs and the informal, more child-centered, programs. Some of the evidence for the effects of early experience on child development and for the effects of teaching style on children's educational progress is reviewed. The paper describes six experimental preschool programs and classifies them in terms of program structure. Student performance in two of these programs, the re-organized Piagetian Preschool Education Program and the Ausubelian Preschool Program, was compared to student performance in a traditional, informal preschool program. Results of the comparison indicated superior performance in the areas of classification, relations, and conservation by the students in the more highly structured programs. The Ausubelian program, characterized by the highest degree of structure, produced the highest level of competency. Delayed testing after an interim period of six months indicated continued improvement for the Ausubelian students. Consideration of learning processes, teacher training, and parent involvement are also considered important components of this program. Results of the study suggest that formal preschool programs are an effective and efficient form of preschool education. (BD)

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A Comparison of Informal and Formal Preschool Programs*

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A Comparison of Informal and Formal Preschool Programs

Elkind has discussed at some length the pros and cons of what has been termed formal and enrichment programs (e.g., Elkind, 1970, 1973, 1976). He tends to oppose the notion that academic instruction is more economical and efficient than the more usual informal and traditional preschool programs. However, he also admits (Elkind, 1973) there is, as yet, no longitudinal evidence to help answer the question--instruction or enrichment for middle-class preschool education?

Formality and Informality in the Preschool Program

The case for structured learning experiences is generally made in relation to the disadvantaged child as a needed alternative to the supposed disorganized environment in which such children live (e.g., Bereiter & Engelmann, 1966; Weikert, 1973). For those children who are expected to get sufficient instruction at home, it has been argued that the preschool can provide needed enrichment kinds of experience. Usually, under such conditions of learning it is considered important to provide the child the possibility of engaging in fundamentally self-initiated enquiry, which is expected to adequately facilitate the growth of physical, social and logico-mathematical intellectual development.

Most proponents of this argument favor a cognitive developmental theory of learning which predicts that children's ability to learn is constrained by whatever stage of cognitive development they happen to be in. It is usual to find that Piaget's theory of intellectual development has been selected (e.g., Elkind, 1976; Furth, 1969; Kamii &

DeVries, 1977; Lavatelli, 1970; Sigel, 1972; Weikert, 1967). It is from the writings of authors such as these, rather than Piaget himself, that various directives for Piaget-based instruction have emerged. One can discern three basic themes. The first echoes the endorsement Piaget has given to the 'active' school (Piaget, 1970, 1974); the child should be actively engaged in self-discovery learning experiences which should have a strong emphasis on play in learning (i.e., child-directed). The second has to do with conflicts and inconsistencies during the process of learning. The child should be allowed to make mistakes and the teacher should encourage the child to resolve conflicts arising from these instances. Finally, learning should have a social flavor; it is expected that development will be enhanced by interactions the child has with peers and interested adults.

In contrast to the proponents of preschool programs variously titled enrichment, open-structure, informal, there are a number of educators who are skeptical of the efficacy of learning which is mainly child-directed (e.g., Berlyne, 1965; Blank, 1973; Fowler, 1962; Hunt, 1961; Sava, 1968). These advocates of a more formal structure for education in the early years argue that academic instruction is more economical, efficient, sufficient, and cognitively stimulating than is the case in the more usual informal, traditional preschool. However, as might be expected in the light of the historical antecedent influences on the growth of preschool education in America, formal preschools are not much in evidence. Blank (1973) has developed a rather complex tutoring strategy aimed at focusing and shifting the attention of the young child appropriately and selectively.

Lavatelli's Early Childhood Curriculum (e.g., 1970, 1971) would have to be considered a highly-structured Piagetian type program. But the only type of formal preschool programs evident in most communities are based on Montessori's principles of education (e.g., Montessori, 1965). To further consider the concept of formality in preschool programs we must stay in the area of theory and related research.

Bloom (1964), in summarizing research findings concerning the importance of early learning, concludes that a formalized approach to educating the young child is considered crucial for later development for three basic reasons. First, selected characteristics appear to undergo rapid change in the early years and it is controlled variations in the environment that are considered so important because they help shape these characteristics during a period of rapid growth. Second, certain sequences of development in the early years seem most important for later development. Finally, and perhaps most importantly, Bloom (1964) emphasizes that it is always easier to learn something new than to eradicate old learnings so that new and more meaningful learning might occur. Hunt (1961), also supports the idea that the rate of development is a function of the validity and quality of learning during the early years of life. He says, "It is tenable to believe that with better knowledge of the process whereby . . . central structures (of intelligence) are modified by experience, the rate of development might be increased substantially, and with pleasure for the developing child [Hunt, 1961, p. 306]." Hunt argues that, though Piaget acknowledged the importance of basing education on the natural phases of the child's interaction with the environment, he

fails to formulate the principle that such influences can force a change in growth of knowledge. The term "force," as used by Hunt, refers to a match between circumstance and existing knowledge. This match must be controlled and directed by the teacher. Hunt is also concerned with sequence in the curriculum. He suggests a programmed progression of encounters which will maximize the potential for intellectual development. In the report of a study by Kolham and Breese as long ago as 1945 it is stated that the most important factor that appears essential for intellectual development is the type of response to the young child's questions and a readiness to explain matters. Smedslund (1961) concluded from existing evidence that controlled learning situations employing training which do not permit simple response learning are likely to induce cognitive change. However, he goes on to say that meaningful change is only likely to occur to the extent that the new learning is matched with existing ideas in the child's mind.

Bennett (1977) has provided a review of studies concerned with the relationships between teaching style and pupils' progress. One conclusion he reaches is that a major deficiency in many studies has been the use of a gross distinction between teaching styles labelled progressive or traditional, democratic or authoritarian, informal or formal. A first task in Bennett's study was to break down the global terms, for example, progressive versus traditional, into their constituent elements which were then translated into questionnaire items. A questionnaire survey approach was then used to establish characteristics of teachers' styles of teaching. Twelve "teacher types" were extracted from a cluster analysis of

data from responses to the questionnaire. These ranged from a type which was most informal to one which was most formal. We will mention two types here since they relate to subsequent sections of this paper which discuss representative preschool programs and the concept of structure associated with knowledge.

Briefly summarizing, informal teacher type (quite informal) favored an integration of subject-matter, child-directed learning (individually or in groups), allowing children freedom of movement and conversation, an opposition to formal assessment and the favoring of intrinsic motivation. A formal teacher type favored separate subject-matter divisions, expository teaching, small-group learning activities directed by teachers, a curb on movement and spontaneous conversation, regular formative assessment with extrinsic rewards. Although the study was conducted with teachers of children at the kindergarten and elementary grades level it serves to point out a clearly defined continuum of teaching style rather than some gross polarity. Bennett then set out to try and answer two questions: Do different teacher styles result in different rates of pupil progress? and, do different types of pupils perform better under differing teacher styles? The results are clear and cohesive. Pupils of formal teachers significantly progress in their attainment more than pupils in either informal or mixed classrooms; anxious and insecure children fare better in structured environments; concurrent with informality in teaching is an increase in anxiety; children show better progress in formal programs irrespective of personality type; the least effective programs were those at the extreme ends of the continuum. Bennett makes

a plea to researchers and educators not to take an either/or stance which does injustice to the general debate. He concludes, "If the key to effective progress lies in the direction and planning provided by teachers, then perhaps another 'ought' is for teachers, and the teachers of teachers, to submit their practices to critical scrutiny [Bennett, 1977, p. 163]."

With these introductory remarks as background I would now like to briefly examine six preschool programs.[1] a) Lavatelli's Early Childhood Curriculum (e.g., Lavatelli, 1970, 1971); b) Weikert's Open Framework Program (e.g., Weikert, 1973); c) Kamii's Piaget for Early Education Program (e.g., Kamii & DeVries, 1977; d) the Piagetian Preschool Program at the University of Wisconsin (U.W.) Preschool Laboratory, 1972-1974 (e.g., Bingham-Newman, Saunders, & Hooper, 1974, 1976; e) the Piagetian Preschool Program - U.W., 1975-continuing (e.g., Ershler, McAllister, & Saunders, 1977); and f) the Ausubelian Preschool Program at the University of Wisconsin Preschool Laboratory, 1975-continuing (e.g., Lawton, Lewis, & Deibert, 1976).[2]

Lavatelli's Early Childhood Curriculum is organized according to three themes: classification; number, space and measurement; and seriation. The basic objective of the program is to lay a foundation for the emergence of concrete operations. The suggested instructional procedure is to organize short structured learning sessions using the various sets of

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[1] A report on the first phase of a longitudinal study comparing these two programs will be issued as a Wisconsin Research and Development Center for Cognitive Learning Technical Report in July or August, 1978.

[2] For a more thorough description and examination see Lawton and Hooper (1978) and Brainerd (1978).

activities, which should be repeated several times a week. The ECC program is designed for use as a sequential series of small group activities.

This program must be considered formal. The teacher is responsible for the organization of each day's program. Content for each activity is always preselected and the correct manipulation of content is emphasized.

Weikert and associates have developed the Cognitively Oriented Curriculum. This program has a single theme: classification. The curriculum is built around eleven different skills, with separate exercises for each. Although both the teacher and child are seen as initiators, the teacher plays the more active role in controlling learning experiences. However, teachers in the Open Framework program are asked to encourage the child to select learning materials and activities. Compared to the Lavatelli program the teacher exerts less control on the program. Since there is, nevertheless, a great deal of guided instruction, the Open Framework program can be termed formal.

Kamii began her work in preschool program development with Weikert. She eventually came to consider the program's effects to be derived from a misunderstanding of Piagetian theory. As in the case of other Piagetian educators she does not consider that logico-mathematical knowledge (e.g., classification skills) can be directly taught; nor does she agree with the aim of "prematurely" moving preoperational preschool children to the stage of concrete operations. Kamii's alternative was to present a Piagetian curriculum she considered more orthodox in conforming to Piaget's theory of psychological development (Kamii & DeVries, 1977).

She set up the Piaget for Early Education preschool at the University of Illinois, Chicago Circle Campus. This program is less clearly defined than other Piagetian type programs. It is still in a developmental phase. However, a number of general features can be described. First, knowledge is described in the three forms identified by Piaget: physical, social, and logico-mathematical knowledge. Kamii and DeVries describe the relationship between the three types of knowledge as interactionism. They stress that logico-mathematical knowledge must be constructed by a process of reflecting abstraction and equilibration and that physical and social knowledge cannot be constructed outside of such a framework. Thus, the child's experience in the preschool must be interactionist in nature for the meaningful development of intelligence to occur. Learning is associated with single tasks - an atomistic viewpoint. Kamii and DeVries (1976) are critical of programs such as Lavatelli's and Weikert's. Their main complaint is that they fall into the "empiricist" school. The Piaget for Early Education program is based on seven principles of teaching. For example, to encourage the child to be independent, curious and courageous, to encourage interaction among children, to accept both right and wrong answers, etc. The teacher's role is to provide an atmosphere conducive to learning, to respond to the child's interests and activities from moment to moment. The main emphasis is on child directed activities. Thus we have now moved to a program that can be described as informal.

Another program that attempted to provide a more orthodox translation of Piagetian theory into the practice of preschool education was the original Piagetian Preschool Education Program. This program was estab-

lished at the University of Wisconsin Preschool Laboratory in 1971. However, in it's operation the program was more structured than Kamii's. Specific activity areas were selected: classification, relations, number, conservation, space, time and measurement. Twenty-eight weeks of lesson plans were developed in each of two succeeding years. Nine specific goals were identified (Bingham-Newman, 1974; see also Bingham-Newman, Saunders, & Hooper, 1976, pp. 11-12). For example, intelligence is developed through interaction between the environment and the organism, learning is an active process, subordinate to development which involves manipulatory and exploratory interaction with the environment, etc. It is clear that the intention of this Wisconsin preschool was to stick with orthodox Piagetian theory. The role of the teacher was to encourage children to actively engage in learning, to be self-directive, to ask interesting questions and to interact with peers. Correct answers were not considered as important as the underlying thinking process; children need to find out about the world for themselves.

The fifth preschool program I shall make reference to is the re-organized Piagetian Preschool Education Program. The original research program had been completed in 1974. A new preschool program, generally based on the original, with a number of slight modifications, was established at the Wisconsin Preschool Laboratory in 1975 (Ershler, McAllister, & Saunders, 1977). The single, most obvious change in program organization was the introduction of small group learning activities which were more structured and teacher-directed than any activities in the previous program. Otherwise, the basic elements of the new program closely paralleled those

of the old.

The final program to be mentioned here is the Ausubelian Preschool Program, also at the University of Wisconsin Preschool Laboratory (Lawton, Lewis, & Deibert, 1976). Ausubel (e.g., 1963, 1968) suggests that cognitive structure is comprised of concepts and propositions (learned from various subject matter areas) arranged in hierarchical structures. In teaching children it is advised that suitable subject matter be organized into a sequence with general ideas taught first and related, more particular knowledge second. Ausubel refers to the process of learning under these conditions as progressive differentiation of knowledge. Ausubel has not distinguished between subject-matter and process concepts. In the Ausubelian program process concepts are described in terms of Piaget's concept of logico-mathematical knowledge; that is, intellectual skills such as classification, relations, conservation, and so on. These two types of conceptual structures are taught hand-in-hand. The reason for this is because we believe content and cognition (as well as individual differences) play an important interactive role in the teaching-learning process. This belief is based on our own research (e.g., Lawton, 1977; Lawton & Wanska, 1978) and the research and observation of others.

Wason and Johnson-Laird observed, "For some considerable time we cherished the illusion that . . . only the structural characteristics of the problem mattered. Only gradually did we realize that . . . content is crucial [Wason & Johnson-Laird, 1972, pp. 244-245]." Scandura also makes the point that, "Knowing the subject matter content . . . is <u>not</u> equivalent to specifying the relevant competence [Scandura, 1977, p. 38]."

In the Ausubelian classroom expository teaching occurs with small groups. These lessons are called "advance organizers" (e.g., Ausubel,

1963, pp. 214-215). At this time high-level subject matter concepts, high level process concepts, or a combination of both are presented verbally and accompanied by concrete exemplars. Children are also actively involved in manipulating concrete learning materials. During subsequent learning activities extensive related particular learning materials are provided. These learning activities are also teacher-directed, but a major emphasis is also placed on encouraging child-directed learning. A basic hierarchical arrangement of content and process concepts has been established and the sequencing of learning experiences is based on this arrangement. However, the structure is hypothetical and feedback from evaluation leads to modifications. We have, for instance, come to realize that prerequisite relationships among content concepts might more typically be represented in a heterarchical manner (e.g., Merrill & Gibbons, 1974). (In heterarchies there are a variety of entry and exit points.) It is predicted that both types of concepts referred to can be taught directly and that it is important to attempt to teach the child the interrelationship between them. Such a direct teaching methodology must be considered formal.

These last two mentioned programs have undergone a comparative pilot-study investigation, which also involved a traditional community preschool. The original Wisconsin project (1972-1974) was also subjected to careful evaluation. In that case, children in the Piagetian Program were also compared to children attending a traditional preschool. Improvement on the various measures over this two year period were similar for both groups of children. Those few comparisons which showed differences did not consistently favor either group.

In the more recent investigation the results are much different. The combined Piagetian-Ausubelian experimental groups achieved significantly better performances on certain classification, relations and conservation tasks than their counterparts in the traditional preschool (Lawton, Hooper, Saunders, & Roth, 1978). In addition the results indicated a general superiority favoring the children in the Ausubelian Program. Delayed posttests administered after an interim period of almost six months indicated a continued improvement on almost all tasks for the Ausubelian group, whereas the children in the traditional program showed little improvement. (A comparison with the Piagetian group was not done at this time due to attrition of the subject sample in that program.)

These comparisons indicate a superior performance in the areas of classification, relations and conservation was achieved by children who had experienced learning experiences with some degree of formal structure. (The degree of formality was highest for the Ausubelian Program, and less so for the Piagetian Program. The traditional preschool program was extremely informal.) It can also be claimed that the teaching of interrelated high-level subject matter and process concepts produced a higher level of competency compared to the other two types of teaching. That such learning was stable over time, and shown to be generalizable in categories of related tasks, speaks well for the efficiency and economy of this formal program.

There is sufficient evidence, I believe, to warrant feeling some confidence in supporting the efficacy of formal structured preschool pro-

grams; though we realize this claim is flying in the face of a long-standing tradition of informality in traditional preschool programs.

In the final section of this paper we would like to consider some aspects of instruction that are pertinent to this position. We must remember that, in general, direct influences on young children's learning by external sources (a teacher, or didactic learning materials, for example) are precluded in informal preschool programs. Teachers in orthodox Piagetian preschools, in particular, apply the principle of self-regulated learning. It is believed that the most important form of knowledge, logico-mathematical knowledge, cannot be directly taught. This view apparently ignores difficulties that occur in information processing, and which are not the prerogative of the very young. It appears fruitless to claim that errors, say, in concrete reasoning made by old[er] children and adults are merely performance errors that mask an underlying, well developed competency. Case (1975) has pointed out a number of limitations that seem to beset the learning processes of both children and adults, the differences by age being quantitative rather than qualitative. These limitations have to do with information processing capacity. Certain possibilities for explaining sources of error in information processing suggested by Case are: factors such as experience (e.g., previously learned concepts and skills), speed or facility in acquiring new knowledge, amount of information the individual can coordinate at one time, and, the extent to which avoidance of selection of incorrect concepts and skills occurs (Case, 1975, pp. 84-85). Case, like Hunt (1961) refers to the concept of "match" or "mismatch between a learner's capacities

for reasoning and the demands of instruction. He suggests that where "mismatch" occurs instructional sequences should be designed according to one or both of the following conditions: "a) the hierarchy span is reduced; b) the logical and natural response hierarchies are linked by a superordinate structure [Case, 1975, p. 85]." We apply both these conditions to the organization of learning, and associated learning materials, in the Ausubelian preschool.

It should also be noted that a teacher training component has been an integral element in the Wisconsin experimental preschool programs since 1971. We have found it particularly helpful to provide the undergraduate students with exposure and involvement in relatively contrasting curriculum approaches as part of their "mini-practicum" experiences. In addition each year six to eight senior-level students are assigned to work in the Ausubelian and Piagetian programs, respectively. Thus far student and head teacher evaluations of these experiences have been uniformly favorable.

Finally, the important area of parent/child relationships and associated attitudes have not been neglected in the present developmental research. Parents are provided with advance descriptive information concerning the respective programs (although the children are randomly assigned to a particular curriculum program) and are encouraged to take an active role with their children. Regular meetings are held with the parent groups and a high degree of parental involvement has resulted. This may be one of the major factors influencing the children's distinctly positive attitudes to each of the programs. The children are, to state it briefly, eager and ready to "learn" and participate in the group activities and

these positive motivations diffuse to the family situations at home. This is shown by the fact that a number of requests for enrolling younger siblings have been made for the Ausubelian and Piagetian programs.

In summary, the analysis of certain informal and formal preschool programs has led to the observation that the most orthodox Piagetian informal program instructional methods fail to show many significant differences compared to other traditional teaching methods. Brainerd (1978) comes to much the same conclusion. Improvements in performance, which have been shown to be both durable and generalizable, have occurred in formal programs. At least with respect to the preschool programs at the University of Wisconsin Laboratory the improved performance of young children in both programs has proved to be superior to that of children in a traditional preschool. In general, the level of performance has been commensurate with degree of structure in teaching methodology, organization of learning materials, and sequencing of learning situations and associated learning materials. Whether we view knowledge in terms of structures of operations (Piaget, 1970), the irreducible structures of content and strategy proposed by Bruner, or the hierarchies of subject matter concepts (Ausubel) in each case we end up with a representational system which, as Fodor (1975) has pointed out, specifies the type(s) of representation available, the rules for establishing relationships among representations, and the particular content in the system.

We would agree with Scandura (1977) that, whatever view of development, learning and instruction we take, and of the relationships amongst this triad, what we need is to produce a "broad, fundamental theory

tailored to the needs of education . . . this means a theory that integrates content, cognition and individual differences into a unified system [Scandura, 1977, p. 52]."

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